

Paper 3

THE CONTRIBUTION OF DRY PEA PRODUCTION TO INCREASED ARABLE PRODUCTION IN CANTERBURY

R. Lough

Agricultural Economics Research Unit
Lincoln College
Canterbury

INTRODUCTION

Peas are not a new crop. They were well known to both the Greeks and Romans. Development of peas as a food crop however, took place in Northern Europe. Records show that by 1066 dried peas had become an important food crop. However, it was not till 1700 to 1800 that the breeding efforts of Thomas Knight and Thomas Laxton produced a pea suitable for consumption in the green state.

New Zealand has a long history of pea production, and since early this century there has been a substantial and relatively stable export trade in dry peas. Up to and including the 1960s, New Zealand grew annually some 10,000-12,000 ha of dry peas producing 20,000-25,000 tonnes of peas. By the 1970s, the area grown had expanded to around 20,000 ha producing in excess of 50,000 tonnes of peas. Three quarters of this production occurred within Canterbury. While total production has shown limited variation in the last 15 years, the market for New Zealand dry peas has changed markedly. Exports of maple peas to the UK for livestock consumption have decreased, with an increase in trade with Japan, Fiji and India, favouring blue peas and marrowfats for human consumption. This market shift has resulted in greater emphasis on quality and a need

to upgrade presentation and packaging. Canterbury has the grower expertise and the climate to produce a quality product, and adequate port facilities for exporting. The ability therefore exists to provide the facilities necessary to package and present the Canterbury pea crop in an attractive form to potential buyers. The place of peas in an expanded arable sector within Canterbury will be determined by the ability of Canterbury growers to produce regularly a product to the buyers specifications, a product that is able to penetrate a quality conscious market.

In assessing the place of dry peas in the arable sector, I will look at two aspects:

- Have those arable farmers who have relied heavily on pea production benefited financially?
- Will arable production expand in Canterbury?

FINANCIAL RETURNS FROM DRY PEA PRODUCTION

This analysis is based upon some 89 financial statements prepared for the 1982/83 season. The analysis does not attempt to assess the profitability of individual

Table 1. Cropping policies of 89 Canterbury farms in 1982-83.

	No peas	Extensive pea production	Intensive pea production
Farm number	53	21	15
Farm area (ha)	201	216	153
Cropping policy per 100 ha			
Wheat	8.8	19.4	11.6
Barley	4.8	15.9	9.5
Oats	1.6	2.6	2.2
Peas	0	7.9	13.9
Small seeds	2.6	19.5	8.6
Other	0.3	2.6	3.8
Total crop	18.1	67.9	49.6
Stock units per 100 ha	1092	656	588
Stock rates per ha pasture (1)	12.9	12.7	10.0

(1) includes small seeds area

Table 2. Capital structure of 89 Canterbury farms, 1982-83 (\$ per 100 ha. start of year).

	No peas	Extensive pea production	Intensive pea production
Land value	281587	368853	344452
Total farm capital	342791	447121	411995
Crop on hand	4239	20953	9462
Working capital	(8462)	(21180)	(12178)
Fixed liabilities	(61470)	(90048)	(81548)
Total equity	277098	356846	327731
Non farm assets	3840	1422	5966
Net resources	280938	358268	333697

enterprises on these properties but rather assumes that those cropping policies with a heavy reliance on peas will produce both financial and non-monetary benefits which will reflect in the bottom line of the farming enterprise. In other words, we are looking at the whole production system, not just part of it.

Farms were divided into those that did not grow dry peas — some 60% of total growers. Those that did grow dry peas, were divided into those with less than 20% of their cropped area in dry peas (extensive pea production) and those with more than 20% of their cropped area (intensive pea production) in dry peas (Table 1).

Table 3. Cash flow position 1982-83 (\$ per 100 ha).

	No peas	Extensive pea production	Intensive pea production
Cash farm income			
Livestock	41578	24975	21421
Grain crops	12630	35399	26436
Small seeds	1778	12188	6192
Peas	0	6561	10133
Other	3338	2180	2804
Total cash farm income	59324	81303	66986
Cash expenditure	48133	71098	54862
Cash surplus farming	11190	11104	12123
+ Non farm income	1906	1612	3449
- Capital expenditure	6537	9904	9468
- Personal expenditure	9258	10850	11927
(A) Cash surplus (deficit)	(2699)	(8038)	(5823)
Finance by —			
Change in fixed liabilities	(3989)	(5982)	(5260)
Change in current account	1290	(2056)	(562)
Subtotal	(2699)	(8038)	(5823)
Offset by —			
(B) Change in value crop on hand	156	5084	4662
Change in number livestock	(800)	(242)	774
Change in value investments	843	788	1652
Total change current assets	199	5633	7088
(C) Change in value land	(7780)	10065	9196
Change in value capital stock	(1025)	(497)	33
Change in value plant	(253)	(2846)	(3411)
Total change in capital assets	(9058)	6722	5818
Net change in resources			
(A & B & C)	(11558)	4317	7083

Increased returns are offset by increasing expenditure with the result that all farming policies produced similar cash surpluses from farming.

Table 4. Direct cash expenditure on 89 Canterbury farms 1983-84 (\$ per 100 ha).

	No peas	Extensive pea production	Intensive pea production
Wages	6246	8692	5264
Animal health	1047	631	711
Seed & fertiliser	4473	8118	7382
Freight	1038	1875	1287
Chemicals	1193	5957	3245
Other	4962	5800	6114
R & M fixed improvements	2208	1865	1088
R & M plant & machinery	2738	5186	4814
Fuel & oil	2824	5680	3970
Administration	3457	4247	4310
Debt servicing	9071	15259	9834
Cash expenditure	39257	63310	48019
Stock purchases	7392	5392	5408
Development expenditure	1480	1492	1430
Total cash expenditure	48129	70194	54857
Depreciation	5353	11713	9790
Total expenditure	53482	81907	64647

It is clear that peas are a crop for intensive cropping rotations. Livestock producers growing crops during pasture renewal programmes preferred cereals to peas. Interestingly, intensive pea production appears to be on smaller properties with a less intensive cropping programme and a lower number of stock units per hectare. This would suggest that intensive pea production takes place on the medium cropping soils, a factor supported by Table 2 which shows that the capital value of intensive pea producing properties is nearly 7.0 per cent lower than the extensive pea producers.

The intensive pea producer is further typified by lower levels of crop on hand which in turn reflects in a lower working capital deficit. This would suggest that intensive pea growers were under less liquidity pressure than extensive pea but intensive small seed producers. Table 3 examines in more detail the liquidity problems of arable producers.

Increased returns are offset by increasing expenditure with the result that all farming policies produced similar cash surpluses from farming.

While all farming policies showed a cash deficit after allowing for capital and personal expenditure, it is clearly the magnitude of these expenditure items which determine the level of the deficit. Characteristically, the level of capital expenditure on intensive cropping properties irrespective of pea production was 45.0 to 50.0 per cent greater than the intensive livestock property.

The intensive pea producer has a lower level of direct cash expenditure than the extensive pea producers. Table 4 examines this in greater detail.

Levels of debt servicing are the single greatest factor affecting the level of total cash expenditure. Other inputs

that possibly warrant attention are:

- Wages — does the intensive pea rotation give a better distribution of labour, reducing the need for pea labour requirements?
- Fuel and oil, and plant repairs and maintenance — the extensive pea producer's vehicle expenses bill comes to \$10,866, some 19.0 percent greater than the intensive pea producers bill of \$8784.
- Chemicals — the intensive pea producer's chemical bill is 45.0 per cent less than that of the other intensive cropping group.

Combined, these three factors represent considerable savings. While not too much of this should be directly attributed to pea production, I do feel they warrant further research effort.

As peas fix nitrogen and improve soil structure, one would expect per hectare production to improve under intensive pea production. Table 5 evaluates per hectare production.

The data in Table 5 suggest that an intensive pea rotation improves the per hectare production of both grain crops and small seeds. The lower return per S.U. coupled with the lower carrying capacity per hectare of pasture gives the intensive pea producer a livestock return of \$350 per ha compared with \$483 per ha for the extensive pea producer, partly offsetting some lower returns from small seed production.

THE FUTURE OF DRY PEA PRODUCTION IN CANTERBURY

This analysis suggests that dry peas have traditionally been part of the restorative phase within an intensive

Table 5. Gross return per production unit of 87 farms in Canterbury.

	No peas	Extensive pea production	Intensive pea production
Livestock \$/S.U.	38	38	35
\$ per ha pasture	490	483	350
Grain crops \$/ha	822	908	1016
Small seeds \$/ha	678	746	997
Peas \$/ha	0	988	813

cropping programme. It would appear that pea producers have partly offset some of the liquidity problems associated with too greater reliance on small seed production during the restorative phase. In addition, there is a suggestion that peas complement other crops within the rotation increasing per hectare production of these crops.

There is also a suggestion that expenditure on wages, vehicles and chemicals are lower for those arable producers who place emphasis on pea production within their rotation.

Provided export markets can be expanded, then peas can certainly be justified within existing rotations as a viable alternative to small seed production during the restorative phase. It is considered, however, that the replacement of small seeds by peas will do little more than maintain pea production within the range of 20,000-25,000 ha per year. A sharp increase in crop production above this level will only be achieved as arable producers perceive the returns from peas increasing relative to other competing enterprises.

Two questions must therefore be answered —

- Is crop production profitable?
- If it is profitable, will we see a dramatic expansion in the area of crop grown?

If we return to Table 3, the profitability of cropping can be assessed. In brief, intensified cropping increases profitability but also increases liquidity pressures. I see the liquidity pressures as being the greatest hinderance to intensification of cropping. I believe cropping can be intensified within the context of the existing tractor power

and farm work force and that this intensification will be into those crops which offer some form of pre-payment. In other words, small seed production — solely because of holding costs — will be restricted. By the same token, livestock production will continue to play a significant role on arable farms if for no other reason than the fact the farmer is paid as soon as he produces a marketable product.

Given high interest rates coupled with a Government attitude of the survival of the fittest without any advice on how to get fit, then long term investment which has typified agricultural development should be cut to a minimum.

Under these circumstances, any investment which does not produce at least a regular cash return and a rapid pay back period must be looked at sideways. Very few arable land use opinions offer these incentives and therefore I see surplus financial resources being invested off the farm in investments showing constant returns.

Peas offer the potential to reverse this trend. If New Zealand pea producers can produce a quality product which is subsequently well presented, then we have the opportunity to market the crop at prices which could give growers returns that generate sufficient confidence to encourage on-farm re-investment.

CONCLUSION

To sum up, I believe dry pea production could increase immediately within the limitations of the existing capital and workforce structure. Production increases over and above this will be market led.